

ABSTRACT OF THE DISCLOSURE

An asymmetric distributed Bragg reflector (DBR) suitable for use in vertical cavity surface emitting lasers. The asymmetric DBR is comprised of stacked material layers having different indexes of refraction that are joined using asymmetrical transition regions in which the transition steps within a transition region have different material compositions, different doping levels, and different layer thicknesses. Adjacent transition regions have different transition steps. Thinner transition regions are relatively highly doped and are located where the optical standing wave within the DBR has a low field strength. Thicker transition regions are relatively lightly doped and are located where the optical standing wave has a relatively high field strength. Beneficially, in the $\text{Al}_x\text{Ga}_{(1-x)}\text{As}$ material system the stacked material layers are alternating layers of AlAs and GaAs. Other material systems will use other alternating layers.

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